I CLAIM:

1. An electric apparatus to collect a sample comprising:

a hollow clamshell casing;

a contoured shape in the hollow clamshell casing to grip in palm and rest finger, thumb and base of hand for comfortable use with either hand;

a horizontal extension from the contoured finger rest in the front rests over the index finger and prevents slippage of device from the palm;

a sample sleeve extending downward from the hollow clamshell casing, the distal end of the sample sleeve forming a cutting edge circumscribing a circular region;

an ejection rod sliding reciprocally from a stowed position within the sample sleeve past the cutting edge into an expulsion position;

an electric gear motor within the clamshell casing which drives, via spur gears, the sample sleeve in a rotational manner;

an actuation means to move said ejection rod by way of an ejection shaft from the retracted and stowed position to the expulsion position;

a collet to hold different diameter sample sleeves;

a collet locking system for removal of sample collet system to replace or change sample sleeve and/or ejection rod;

two spur gears within the hollow clamshell casing allowing for a mechanism that can be enclosed in an ergonomic shape; and,

ergonomically designed hollow clamshell casing sculpted to the hand and configured to reduce or eliminate repetitive stress injury.

2. The apparatus of claim 1 further including biasing means to bias said ejection shaft and ejection rod in said stowed position. (The return-spring for the motor actuation button is built into the switch).

3. The apparatus of claim 1 wherein said ejection rod means comprises an ejection button positioned at the top of the hollow clamshell casing. This button is operated under a compression spring action to bias the ejection shaft and ejection rod to the stowed position.

4. The apparatus of claims 1, 2 and 3 wherein said ejection rod means comprises an ejection button positioned at the top of the hollow clamshell casing. This ejection button is operated under a spring and when depressed extends the ejection shaft which in turn extends the pressure fitted

ejection rod to the expulsion position from the end of the sample sleeve. This ejection rod travels through the hollow core of the primary drive shaft.

5. The apparatus of claim 1 wherein said activation means comprises a motor activation button positioned at the top of the hollow clamshell casing. This momentary switch is operated under a spring action to bias the switch to the normally opened position.

6. The apparatus of claims 1, 3 and 5 wherein said motor activation button is positioned at the top of the hollow clamshell casing. This motor activation button when depressed biases the switch to complete the circuit to the motor. This activates the motor and therefore rotates the primary drive shaft, which rotates the sample sleeve in the collet.

7. The apparatus of claim 1 having a hollow clamshell casing with contours to accommodate the palm of either hand and for the fingers, thumb and base of hand to rest comfortably and to reduce slipping when gripped. The hollow clamshell casing is gripped by the entire hand and not just the fingers, thereby reducing hand and wrist strain.

8. The apparatus in claim 1 having a motor to rotate the sample sleeve thereby requiring no wrist movement to rotate the cutting edge, allowing the wrist to remain in a neutral (straight) position. This reduces or eliminates repetitive stress injury which was a common complaint with prior art manual coring tools.

9. The apparatus in claims 1, 6 and 7 having juxtapose spur gears that allow for the ergonomic design of a hollow clamshell casing to be sculpted to the hand with allowances for the fingers, thumb and base of the hand to rest comfortably similar to holding a video game joystick.

10. The apparatus in claims 1 and 8 having an ergonomic design such that the entire hand grasps the hollow clamshell casing as opposed to just the fingers of the hand as occurs in the prior art. The hand and fingers hold the apparatus, equally distributing the effect, therefore less repetitive stress is realized.

11. The apparatus in claim 1 wherein the motor may be activated by a push button located on the top of the hollow clamshell casing.

12. The apparatus in claim 1 wherein the collet system is designed to accommodate a plurality of different diameter sample sleeves.

13. The apparatus in claims 1 and 11 wherein the length of the sample sleeve may be varied to varied to collect samples from source materials in deep collecting receptacles such as micro-titre plates, or to sample source material at hard to reach locations. The versatile accommodation of the

extended length of the sample sleeves also allows for positioning of sample on preferred sampling stages or depositing deep within a collection vial.

14. The apparatus in claims 1, 7 and 10 wherein the motorized rotation of the sample sleeve allows for thicker samples to be collected than otherwise sampled with a manual coring tool.
15. The apparatus in claims 1, 7, 10, 11, and 12 wherein the motor and razor sharp edge cutting edge of the sample sleeve allows this device to be used for high throughput sampling of large volumes of blood cards, for instance, while reducing RSI.
16. The apparatus in claims 1, 5, 11, 12 and 13 wherein the sample sleeve enables the operator to place the tip directly in the vial or plate well and to view the sample following delivery. This device offers an alternative to automated systems, eliminates the cross contamination that may occur and ensures correct transfer of sample to appropriate collection vial.
17. The apparatus in claims 1, 7, 11, 13 and 14 wherein the razor sharp cutting edge of the sample sleeve enables this device to sample a variety of thicker source materials without the creation of artefact remnant threads, which could lead to cross contamination. This cross contamination can occur with automated punching systems which, through the design of the punch, shear the paper sample to be extracted, thereby creating fibre artefacts and do not cut the sample as in the case with the present invention.
18. The apparatus in claims 1, 5, 9, 11 and 12 wherein the razor sharp cutting edge of the sample sleeve enables this device to sample a variety of materials at any location on the surface and is not restricted to specific regions of the source material. Unlike automated systems, which are restricted to sample regions not exceeding the throat of the automated punch.
19. The apparatus in claims 1, 5, 9, 11 and 12 wherein the razor sharp edge of sample sleeve enables this device to sample a variety of substrates beyond blood cards for which the automated systems are specifically designed. This invention may sample a variety of media beyond blood cards and including, but not limited to, leaf samples, plastic substrates, human and animal tissue.
20. The apparatus in claims 1, 5, 9, 11 and 12 wherein the razor sharp edge of sample sleeve enables this device to sample the same substrate several times between expulsions such that multiple samples can be delivered to a single vial. Bench top systems punch samples and may not deliver these samples with as much versatility as desired. Bench top punch systems may generate artefacts and result in cross contamination.
21. The apparatus in claims 1 and 10, 11, 12, 13 wherein the design of the unit for electric coring is

such that it is designed to ensure the cored sample is deposited in a preferred collecting vial or location. Length of sample sleeve allows for placement and seating of sample in base of deep collecting vessels when sample is ejected. Such positioning is not always possible when dealing with automated systems that are left unattended. Automated systems may accidentally, or due to static build-up, result in more than one sample adhering to the wall of the delivery column, and therefore not reaching the collection vessel, or reaching the collection vessel but not properly seated in the vessel. This can result in loss of sample from the vessel and potential cross contamination.

22. The apparatus in claim 1 wherein a spindle locking mechanism may be activated to lock the spindle for removal of the collet nut and access to the sample sleeves.

23. The apparatus in claims 1 and 11 wherein this device allows for a single unit with consumable sleeves of variable diameters and lengths.

24. The apparatus in claims 1 and 6, 7, 8 wherein the apparatus is ergonomically designed such that either hand can comfortably use the unit, reducing RSI by allowing for the option of using alternate hands.

25. The apparatus in claims 1 and 10, 11, 12, 13 wherein the sharp cutting edge and design of the unit for electric coring results in clean, artefact free samples being extracted. The absence of paper fibers (paper) or other artefacts (i.e. plant tissue) reduces the cleaning cycle between sample extractions.

26. The apparatus in claims 1, 4, 5 and 6 includes a motor of design and size to keep the unit light and requiring less effort and strain to move when operating thereby reducing RSI.

27. The apparatus of claims 1, 2, 3, 4 and 9 wherein said ejection rod means comprises an ejection button positioned at the top of the hollow clamshell casing. This button when operated compresses a spring and biases the ejection rod to the expulsion position. This ejection rod travels through the hollow of the collet spindle therefore allowing the end of the ejection rod to contact the sample from the inside of the sample sleeve and eject sample.

28. The apparatus of claim 1 wherein there is no associated static electricity generated with this design. The absence of static electricity ensures sample is ejected to desired location. Prior art electric punching units create static electricity which may result in loss of sample or cross contamination.